Patent Claims

1. A method for generating images in computed tomography with the aid of a 3D image reconstruction method including at least the following method steps:

1.1. in order to scan an examination object with the aid of a conical beam emanating from a focus and the aid of a planar, preferably multirow, detector for detecting the beam, the focus is moved on a spiral focal track about the examination object, the detector supplying output data, that correspond to the detected radiation, and

1.2. image voxels from the scanned examination object are reconstructed from the possibly preprocessed output data and reproduce the attenuation coefficients of the respective voxel,

1.3. each image voxel being reconstructed separately from projection data that comprise a projection angular range of at least 180°, and

1.4. an approximate weighting taking place for each voxel considered in order to normalize the projection data used relating to the voxel.

2. The method as claimed in the preceding patent claim 1, characterized in that in order to reconstruct an image voxel (V), use is made of all the detector data along a straight line that runs through the cone beam projection of the image voxel (V) and is aligned in the direction of the projection ($\tilde{t}$) of the spiral tangent (S_t).

3. The method as claimed in one of the preceding patent claims 1 to 2, characterized in that the image data of the detector image are subjected to a cosine weighting for compensating oblique radiation.

4. The method as claimed in one of the preceding patent claims 1 to 3, characterized in that data

not directly available are obtained from the available data by interpolation from neighboring detector data (detector pixel values).

5. The method as claimed in one of the preceding patent claims 1 to 4, characterized in that during the weighting for compensating the data redundancy (normalization) two measuring beams (Sa, Sb) are regarded as redundant precisely when it holds that: ($\theta_a = (2k \cdot \pi + \theta_b$ and $p_a = p_b$) or ($\theta_a = (2k + 1) \cdot \pi + \theta_b$ and $p_a = -p_b$), where
k represents an arbitrary natural number,
θ represents the projection angle, and
p represents the distance from the z-axis.

6. The method as claimed in the preceding patent claim 5, characterized in that the redundant data are multiplied by generalized Parker weights.

7. The method as claimed in one of the preceding patent claims 1 to 6, characterized in that use is made of a ramp filter that is manipulated with the aid of a smoothing window.

8. The method as claimed in one of the preceding patent claims 1 to 7, characterized in that a distance weighting is performed for the purpose of 3D back projection into the voxel considered.

9. The method as claimed in one of the preceding patent claims 1 to 8, characterized in that it is used for cardiac computed tomography by selecting, weighting or sorting the measured data in accordance with the movement phases of an examined heart.

10. A CT unit for scanning an examination object with the aid of a beam emanating from at least one focus

and with the aid of a detector array that is of planar design and has a multiplicity of distributed detector elements for detecting the rays of the beam, the at least one focus being movable relative to the examination object on at least one focal track that runs around the examination object and a detector array situated opposite, at least means for collecting detector data, filtering and 3D back projection being provided, and the means for processing the measured data being fashioned in such a way that the method as claimed in one of claims 1 to 9 can be carried out.

11. The CT unit as claimed in claim 10, characterized in that said functional means are implemented at least partially by programs or program modules.